

THE CLAIMS

What is claimed is:

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1. A method for adjusting the thickness of a thin semiconductor material layer which comprises:

measuring the layer to establish a thickness profile;

10 determining thickness adjustment specifications from the measured thickness profile; and

adjusting the thickness of the layer in accordance with the specifications by sacrificial oxidation.

15 2. The method according to claim 1 wherein the thickness adjustment specifications correspond to at least one of uniform thickness modification across the layer, or differential thickness modification across the layer.

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3. The method according to claim 1 wherein the thickness adjustment specifications are established to produce a layer having a constant thickness over the entire layer.

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4. The method according to claim 1 which further comprises applying thickness adjustments simultaneously to the layer surface.

30 5. The method according to claim 1 further comprising preparing batches of layers for adjustment of layer thicknesses.

35 6. The method according to claim 5 further comprising performing layer thickness adjustment on the batches of layers.

7. The method according to claim 5 further comprising defining a final target thickness profile for all layers of the batch, and individualizing the respective thickness adjustment specifications for each layer of the batch so that a final layer thickness profile of each layer of the batch is as close as possible to the final target thickness profile.

8. The method according to claims 5 further comprising defining a single target thickness profile for all of the layers of the batch, and utilizing the same thickness adjustment specification for all of the layers of the batch, wherein the specification is a function of at least one thickness measurement performed on a layer of the batch.

9. The method according to claim 5 which further comprises defining a target thickness profile including a target value that designates a single target thickness to be achieved over the layer surface for each layer of the batch.

10. The method according to claim 1 which further comprises treating batches of layers, wherein one layer thickness in the batch is adjusted by a certain given pitch while a subsequent layer thickness is being measured.

11. The method according to claim 1 wherein the thickness profile is measured by at least one of an ellipsometer or a reflectometer.

12. The method according to claim 1 wherein the sacrificial oxidation is implemented by utilizing at least one of a thermal oxidation technique or a rapid thermal oxidation technique.

- 5 13. The method according to claim 1 which further comprises selectively oxidizing different locations of the layer during sacrificial oxidation.
- 10 14. The method according to claim 1 which further comprises selectively powering a plurality of heater lamps situated to face different locations of the layer during sacrificial oxidation to locally adjust the temperature at which the layer is oxidized.
- 15 15. The method according to claim 1 wherein the thin semiconductor material layer is an upper layer of a multilayer structure.
- 20 16. The method according to claim 15 wherein the upper layer is made of silicon.
- 25 17. The method according to claim 15 wherein the multilayer structure is an SOI structure.
- 30 18. An apparatus for adjusting the thickness of a thin semiconductor material layer comprising:
means for measuring the layer to establish a thickness profile;
means for determining thickness adjustment specifications from the measured thickness profile;
means for conducting sacrificial oxidation for adjusting the thickness of the layer in accordance with the specifications.
- 35 19. The apparatus according to claim 18 further comprising a processor unit operatively associated with the measuring means and the thickness adjustment means.
20. The apparatus according to claim 18 wherein the measuring means, the thickness adjustment means, and the processor unit are integrated in the apparatus.

21. The apparatus according to claim 18 wherein the measuring means is a reflectometer.

22. The apparatus according to claim 18 wherein the
5 thickness adjustment means is suitable for treating the thickness of the entire surface of at least one layer simultaneously in a selective manner.

23. The apparatus according to claim 18 wherein the
10 thickness adjustment means is adapted to adjust the thickness of one layer at a time.

24. The apparatus according to claim 23 wherein the
15 thickness adjustment means is a tube oven.

25. The apparatus according to claim 18 wherein the
thickness adjustment means enables the thickness of
entire batches of layers to be adjusted at one time.

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